

**BEFORE THE
PUBLIC SERVICE COMMISSION
OF SOUTH CAROLINA
DOCKET NO. 2020-263-E**

Cherokee County Cogeneration Partners,)
LLC)
Complainant,)
v.)
Duke Energy Progress, LLC and Duke)
Energy Carolinas, LLC,)
Respondents.)

**PRE-FILED DIRECT TESTIMONY OF
KURT G. STRUNK
ON BEHALF OF
CHEROKEE COUNTY COGENERATION PARTNERS, LLC**

MAY 3, 2021

TABLE OF CONTENTS

I.	Introduction.....	1
II.	Overview of PURPA and Applicable Economic Standards	6
	A. PURPA Assures a Market for QF Output and Assures QF Financeability.	6
	B. PURPA Provides for Payments of Avoided Capacity Costs and Avoided Energy Costs.....	10
III.	Application of Avoided Capacity Costs to Cherokee	11
IV.	Form of Contract and Order of Magnitude Avoided Cost Rate.....	13
V.	Summary	17
	Appendix: Translation of \$/MWh Rates Into \$/kW-Year Rates for Cherokee Tolling.....	19

1 **I. INTRODUCTION**

2 **1. Q. Please state your name, title, and business address.**

3 A. My name is Kurt G. Strunk. My business address is 1166 Avenue of the
4 Americas, New York, New York, 10036.

5 **2. Q. By whom are you employed and in what capacity?**

6 A. I am a Managing Director of National Economic Research Associates, Inc.
7 (“NERA”). NERA is a firm of consulting economists with its principal offices
8 in a number of major U.S. and European cities.

9 I hold an M.B.A. with Distinction from INSEAD (The European Institute of
10 Business Administration) and an honors degree in Economics from Vassar
11 College.

12 **3. Q. On whose behalf are you submitting this testimony?**

13 A. I am submitting this testimony on behalf of Cherokee County Cogeneration
14 Partners, LLC (“Cherokee”).

15 **4. Q. Please describe your work experience pertaining to this proceeding.**

16 A. Since the mid-1990s, my work at NERA has focused on strategic and corporate
17 financial issues facing public utilities in the electric power, natural gas, and oil
18 sectors. I have served as a testifying expert on public utility rate matters before
19 federal, state, and provincial regulatory commissions in the U.S. and Canada,
20 and in both arbitration and U.S. court proceedings.

21 I have extensive experience with all aspects of the electric utility industry and
22 have advised utilities as they undertook major regulatory or corporate
23 transformations. In the mid- to late-1990s, I was closely involved in the state
24 electric sector restructuring processes in California, Maryland, New Jersey, and

1 New York. I also advised on the restructuring of the electric sector in Mexico,
2 over the course of two multi-year assignments. I have been active as a
3 consultant on matters relating to the development of competitive power pools.
4 My work often involves the analysis of utility procurement decisions and
5 procurement implementation. I have advised on the structuring and origination
6 of many wholesale energy transactions and the acquisition of fuels by regulated
7 utilities in North America, Europe, and Latin America.

8 A key focus of my practice at NERA is financial matters. I frequently serve as
9 an expert on the requirements of investors with regard to committing capital to
10 energy sector investments. My work in matters relating to power generation is
11 extensive and includes resource planning, asset and contract valuation, and
12 competitive bidding. I have worked on dozens of assignments related to power
13 contracting and generation development, dealing with Qualifying Facilities
14 (“QFs”) under the Public Utility Regulatory Policies Act (“PURPA”) and other
15 independent power projects.

16 Several of my assignments have required that I perform in-depth analyses of
17 power markets in the Carolinas. As a result, I am very familiar with the market,
18 regulatory and legislative environment in which Cherokee and Duke operate.

19 My current curriculum vitae, which more fully details my educational,
20 consulting and testifying experience, is provided as **Exhibit KGS-01**.

21 **5. Q. Have you previously testified before regulatory commissions in other**
22 **jurisdictions?**

23 A. Yes. I frequently serve as an expert in matters before state and federal
24 regulatory commissions. I have presented expert evidence in matters before the
25 Arizona Corporation Commission, Arkansas Public Service Commission,

1 California Public Utilities Commission, Hawai'i Public Utilities Commission,
2 Maine Public Utilities Commission, Maryland Public Service Commission,
3 Massachusetts Energy Facilities Siting Board, Nevada Public Utilities
4 Commission, New York Public Service Commission, North Carolina Utilities
5 Commission, Ohio Public Utilities Commission, Regulatory Commission of
6 Alaska, Texas Public Utilities Commission, Washington Utilities and
7 Transportation Commission, Federal Energy Regulatory Commission, and
8 National Energy Board of Canada.

9 **6. Q. What is the purpose of your testimony?**

10 A. Cherokee initiated this proceeding because it has not been able to obtain a
11 PURPA contract to extend or replace its existing contract on terms consistent
12 with the offtaking utility's obligations under PURPA. My testimony has three
13 primary purposes:

- 14 1. To explain the economic and policy goals of PURPA as they relate to
15 Cherokee and the instant dispute before the Commission.
- 16 2. To address whether Cherokee could reasonably have expected to receive an
17 avoided cost rate that included avoided capacity costs when, in September
18 2018, it communicated to Duke Energy Carolinas ("DEC") its commitment
19 of the Cherokee capacity for a forward period beginning January 1, 2021.
- 20 3. To provide high-level comments on the form of PURPA contract appropriate
21 for Cherokee and to present preliminary calculations of the rate that
22 Cherokee reasonably could have anticipated in a PURPA contract
23 replacement or extension, as of September 2018 for deliveries starting
24 January 1, 2021.

1 **7. Q. What are your primary conclusions?**

2 A. My conclusions fall into the three general areas referenced above: (1) the
3 economic intent of PURPA, (2) the applicability of avoided capacity costs to
4 Cherokee, and (3) the form of contract and approximate rate level that Cherokee
5 would reasonably have expected as of September 2018 based on DEC's then
6 forecasted avoided costs. I address each in turn.

7 On the economic intent of PURPA as it relates to the instant dispute between
8 Cherokee, DEC, and Duke Energy Progress ("DEP"), I reach the following
9 conclusions:

- 10 • PURPA guarantees a market for the output of QFs;
- 11 • PURPA intends to facilitate financing for QFs;
- 12 • As an economic matter, the establishment of a LEO well in advance of
13 the contract delivery date helps to assure financing for QFs and allows
14 QFs to commit their output on a forward basis. Such practice also
15 assures that QFs will provide a practical alternative to new investments
16 that otherwise would be made by the host utility. Advance contracting
17 assures that QFs can actually displace future utility investments,
18 allowing the utility to avoid costs. By the time the contract delivery date
19 arrives, host utilities will typically have already filled capacity needs and
20 will not be able to avoid or defer investments in generation resources as
21 intended under PURPA.

22 Regarding the applicability of avoided capacity costs to Cherokee, I find:

- 23 • The Cherokee facility is a cogeneration QF that is fully dispatchable by
24 Duke whenever it calls upon it, thereby providing reliable capacity to the

1 grid. Cherokee's dispatchability sets it apart from intermittent solar or
2 wind QFs that cannot be dispatched.

- 3 • PURPA and applicable case precedent call for the payment of avoided
4 capacity costs to QFs in situations where the host utility has a capacity
5 need.
- 6 • As a dispatchable QF committing capacity for a period when DEC
7 intended to make capacity additions, Cherokee should receive payments
8 reflective of Duke's avoided capacity costs.
- 9 • It is reasonable to have required Duke to evaluate and apply its avoided
10 capacity costs as of September 2018 when Cherokee formally
11 communicated to DEC the commitment of its output for the period
12 beginning January 1, 2021. In 2018, Duke had sufficient lead time to
13 defer or avoid investments in new generation capacity. Applying
14 avoided cost pricing from 2021, after Cherokee's PURPA contract was
15 initially set to expire, is unreasonable because by then DEC and DEP
16 should be expected to have filled the capacity needs that the Cherokee
17 facility could have served to mitigate.
- 18 • The factual circumstances as of September 2018 support capacity
19 payments for the Cherokee facility. DEC's 2018 Integrated Resource
20 Plan ("IRP") filed with this Commission in Docket # 2018-10-E
21 establishes that DEC intended to make investments in new capacity
22 additions during the period 2020-2024. A new or renewed PURPA
23 contract with the Cherokee facility provided DEC with an opportunity to
24 defer or avoid such investments. Additionally, at that time, Duke had a
25 standard offer QF rate that included payments to reflect the value of
26 avoided investments in new capacity. Duke was making such capacity

1 payments available to other QFs. In this regard, Duke's refusal to offer
2 payments for avoided capacity costs to Cherokee was discriminatory.

3 Regarding the form of contract and approximate rate level that Cherokee could
4 reasonably have expected as of September 2018, I find:

- 5 • It is reasonable that Cherokee would have expected to enter into a new
6 (or renewed) tolling agreement with DEC. A new tolling agreement
7 represents a continuation of the prior contracting arrangement between
8 DEC and Cherokee under PURPA. Tolling agreements offer distinct
9 advantages for DEC and its customers. Such agreements protect DEC
10 customers from the risks of locking in forecast avoided costs that
11 subsequently become out of market as gas prices change. They also
12 enhance the efficiency of DEC's dispatch.
- 13 • A \$110/kW-year capacity charge under a tolling agreement contract
14 structure represents a fair and reasonable rate for Cherokee, based on
15 Cherokee's commitment of capacity to DEC in September 2018 and the
16 available evidence regarding DEC's then avoided-cost forecasts.

17 **II. OVERVIEW OF PURPA AND APPLICABLE ECONOMIC STANDARDS**

18 **A. PURPA ASSURES A MARKET FOR QF OUTPUT AND ASSURES QF**
19 **FINANCEABILITY.**

20 **8. Q. Please provide background on PURPA.**

21 A. PURPA imposes a must-take obligation on electric utilities and creates a market
22 for the output of QFs where otherwise such market may not exist or may be
23 difficult to access. The applicable federal regulation specifies the rights of the
24 QF as follows:

Each qualifying facility shall have the option either: (1) To provide energy as the qualifying facility determines such energy to be available for such purchases, in which case the rates for such purchases shall be based on the purchasing utility's avoided costs calculated at the time of delivery; or (2) To provide energy or capacity pursuant to a legally enforceable obligation for the delivery of energy or capacity over a specified term, in which case **the rates for such purchases, at the option of the qualifying facility exercised prior to the beginning of the specified term, be based on either: (i) The avoided costs calculated at the time of delivery; or (ii) The avoided costs calculated at the time the obligation is incurred.**¹ [emphasis added]

By creating a market for the QF's output, and offering pricing based on the host utility's avoided cost, PURPA allows QFs to displace resources that would otherwise be developed or contracted by the host utility without increasing costs to customers.

9. Q. Please describe your understanding of Cherokee's rights as a Qualifying Facility under PURPA.

A. I understand that the statute and implementing regulations grant Cherokee a number of distinct rights that are exclusive to Qualifying Facilities. At a high level, PURPA's primary goals included 1) the conservation of electric energy, 2) increased efficiency in the use of facilities and resources by electric utilities, and 3) equitable retail rates for electric consumers. To achieve these goals, PURPA and implementing regulations established by the Federal Energy Regulatory Commission ("FERC") created a program to provide 1) a consistent federal framework of rights extended to all Qualifying Facilities, and 2) flexibility for state regulatory commissions to develop state-specific rules and processes consistent with the broader federal framework. Under PURPA, Qualifying Facilities may:

- Sell energy and/or capacity to utilities;

¹ 18 C.F.R. § 292.304(d).

- Be paid a rate for that capacity and energy based on the utilities' avoided costs;
- Purchase backup service, transmission, and other services from utilities; and
- Create a "legally enforceable obligation" ("LEO") to commit the QF's energy and/or capacity to utilities.

10. Q. **As a practical matter, what significance does the establishment of a "Legally Enforceable Obligation" ("LEO") have for QFs?**

A. A LEO is significant for QFs because it helps them to obtain financing. A LEO allows QFs to demonstrate to lenders the existence of legally binding offtake arrangements with the host utility. A LEO is also used in fixing the date on which forward-looking avoided costs are to be established. The forward-looking avoided costs are the basis for the rates paid to QFs that elect to sell at rates established under a LEO.

The goal of facilitating financing for QFs shaped the language in the PURPA statute itself and has also guided the implementation of PURPA by FERC and state commissions. FERC has recognized that in order to meet the statute's goal of encouraging cogeneration and small power production, it must promulgate regulations that permit QFs to access capital. For example, FERC's decision in Windham Solar explains:

the Commission has long held that its regulations pertaining to legally enforceable obligations “are intended to reconcile the requirement that the rates for purchases equal to the utilities’ avoided cost with the need for qualifying facilities to be able to enter into contractual commitments, by necessity, on estimates of future avoided costs” and has explicitly agreed with previous commenters that “stressed the need for certainty with regard to return on investment in new technologies.” Given this “need for certainty with regard to return on investment,” coupled with Congress’ directive that the Commission “encourage” QFs, **a legally enforceable obligation should be long enough to allow QFs reasonable opportunities to attract capital from potential investors.**² [citations omitted, emphasis added]

11. Q. **Please explain why financing for an existing facility with an expiring contract is important.**

A. Just as financing is a concern for yet-to-be-constructed power generation projects, which face high risks and challenges in obtaining financing, it is also a concern for existing power projects. Without the ability to refinance debt in changing capital market conditions, rollover debt upon maturity, and tap markets for ongoing capital requirements, an existing power project could be forced to shut down. Hence, the guidance established by FERC for QFs under development has implications for QFs that are already operating. Failure to provide for adequate commercial agreements under a LEO could jeopardize the ability of a QF to continue operations, leading to lower levels of production from cogenerators and small power producers.

12. Q. **How has FERC described the QF’s commitment of its output under a LEO?**

A. FERC has found that the formation of a LEO depends on the Qualifying Facility’s actions to commit its output to the utility; it does not depend on the utility’s

² Windham Solar LLC and Allco Finance Ltd, 157 FERC ¶ 61,134, P 8 (2016).

actions.³ A utility cannot delay negotiations or refuse to execute a contract with a Qualifying Facility.⁴

B. PURPA PROVIDES FOR PAYMENTS OF AVOIDED CAPACITY COSTS AND AVOIDED ENERGY COSTS

13. Q. Please provide your understanding of the avoided costs that QFs are entitled to under PURPA.

A. When implementing PURPA, FERC and state commissions have consistently recognized that the host utility can use a QF contract to avoid contracting for or building new capacity. This benefit comes in addition to the benefit of avoiding the production cost of energy or the cost of purchased power. Accordingly, QF contracts typically provide compensation that encompasses both avoided capacity costs and avoided energy costs.

14. Q. In South Carolina, do host utilities offer compensation for avoided capacity costs?

A. Yes. The standard offer QF contracts, corresponding to DEC's Schedule PP rate, incorporate compensation for avoided capacity costs. In Order No. 2019-881, the Commission allowed for a levelized payment that reflects the value of any needed capacity that could be avoided in any of the future years covered by the QF contract.⁵ In Order No. 2016-349, following collaboration among stakeholders, the Commission approved DEC's proposal to utilize the standard avoided cost tariff rates for Option B approved in North Carolina Utilities Commission Docket E-100, sub 140, applicable for variable, five-year, and ten-year terms for Qualifying Facilities ("QFs") two Megawatts ("MW") and under.

³ Several FERC orders establish this principle, including *FLS Energy, Inc.* 157 FERC ¶ 61,211 and *JD Wind I, LLC*, 129 FERC ¶ 61,148.

⁴ See *FLS Energy, Inc.* 157 FERC ¶ 61,211. See also *Final Rule Regarding the Implementation of Section 210 of the Public Utility Regulatory Policies Act of 1978*, Order No. 69, FERC Stats. & Regs.

⁵ See South Carolina PSC Order No. 2019-881(A).

Both approved QF rates included compensation for DEC's avoided capacity costs.

15. Q. Is there a common denominator across state regulatory commissions as far as avoided capacity costs are concerned?

A. Yes. In my experience, state regulatory commissions do act consistently in that they require that the host utility provide QFs with compensation for avoided capacity costs when the host utility can avoid, defer, or resize future investments in capacity.

III. APPLICATION OF AVOIDED CAPACITY COSTS TO CHEROKEE

16. Q. Is it your understanding that Cherokee found DEC's October 2018 offer inadequate because it did not include compensation for Duke's avoided capacity costs?

A. Yes. The lack of any compensation for DEC's avoided capacity costs was a principal objection Cherokee had to the DEC offer. I understand Cherokee also found the fixed-peak and off-peak \$/MWh rate structure of the offer inappropriate, since the existing PURPA contract has functioned as a tolling agreement. Furthermore, Cherokee has sought the calculations from DEC that would support the offer. Cherokee requested these calculations because the energy rates in DEC's offer to Cherokee differed from DEC's standard offer energy rates approved by this Commission and Cherokee sought to understand the differences.

17. Q. Should DEC's October 2018 offer have included compensation for DEC's avoided capacity costs?

A. Yes. The information DEC submitted to this Commission in its 2018 Integrated Resource Plan supports the need to include compensation for DEC's avoided capacity costs. In that plan, DEC identifies investments in new capacity

1 additions during the period 2020-2024. A new or renewed PURPA contract
2 with the Cherokee facility provided DEC with an opportunity to defer or avoid
3 such investments. In such a context, it was unreasonable for DEC to posture
4 that it “does not have a capacity need” in its 2018 negotiations with Cherokee
5 for a PURPA contract beginning January 1, 2021.

6 **18. Q. What new capacity additions does DEC’s 2018 IRP identify?**

7 A. On Page 59 of DEC’s 2018 IRP, Duke identifies as part of its base case portfolio
8 (Portfolio 1) two sets of designated capacity additions in the relevant time
9 frame:

- 10 1. Four 65 MW upgrades to the Bad Creek pumped storage facility, one per
11 year during the period 2020 through 2023.
- 12 2. A 402 MW Combustion Turbine at Lincoln, with commercial operation
13 projected for December 2024.

14 On Page 62 of that same IRP, DEC also identifies as part of Portfolio 1 new
15 combined heat and power capacity of 22 MW in 2020 and an additional 22 MW
16 in 2021. Portfolio 1 also includes the addition of 120 MW of energy storage
17 from 2020 through 2026, as shown in Tables 12-E and 12-F of the IRP.

18 Furthermore, DEC includes undesignated combined cycle additions of
19 approximately 2500 MW for the period beyond 2025, and over 400 MW of new
20 peaking combustion turbine capacity in 2033.

21 **19. Q. Is it your understanding that in October 2018, when DEC offered Cherokee**
22 **a rate that excluded avoided capacity cost compensation, DEC was**
23 **meanwhile offering other QFs a rate that included compensation for DEC’s**
24 **avoided capacity costs?**

25 A. Yes. I reviewed the standard offer rate that DEC made available to QFs under
26 Schedule PP. That rate provided compensation to QFs for both avoided energy

cost *and* avoided capacity cost and was made available to all QFs eligible for the standard offer, including intermittent resources.⁶ As I noted previously, Cherokee is not an intermittent resource; it is fully dispatchable by Duke. Indeed, Cherokee's prior PURPA contract had been in place since 2013 and included capacity payments that seemingly provide for avoided capacity costs. DEC's decision not to provide avoided capacity cost compensation to Cherokee was discriminatory.

IV. FORM OF CONTRACT AND ORDER OF MAGNITUDE AVOIDED COST RATE

20. Q. You noted that Cherokee expected the form of the contract to track its existing PURPA contract with DEC. Please explain.

A. The existing Cherokee PURPA contract with DEC is structured as a tolling agreement, under which Duke provides the gas and can dispatch the facility when economic. DEC's October 2018 offer did not anticipate a tolling agreement. Rather, it anticipated that Cherokee would procure the gas, produce power, and sell the output of the cogeneration facility to DEC at a fixed per megawatt-hour rate in peak hours and an alternative per megawatt-hour rate in off-peak hours.

21. Q. Are there advantages to the tolling arrangement?

A. Yes, the tolling agreement offers two advantages that benefit DEC's customers:

1. It protects customers from having must-take arrangements with resources that may become out of market; and
2. It enhances the efficiency of DEC's dispatch.

⁶ DEC's standard offer compensation for avoided capacity costs is structured as a \$/MWh payment in pre-specified peak hours. Intermittent facilities producing during those specific peak hour periods receive the compensation for DEC's avoided capacity costs.

1 **22. Q. Please describe the first advantage of the tolling arrangement.**

2 A. The tolling arrangement protects DEC customers because it effectively indexes
3 the energy price paid for energy from Cherokee to the prevailing gas market. To
4 the extent that gas prices decline, DEC customers will be able to access energy
5 from Cherokee at the lower gas-indexed price. Such access would not be
6 possible under the fixed energy rates DEC offered to Cherokee. DEC customers
7 would not be protected against declining fuel prices.

8 History shows that fixed-rate PURPA contracts can become out of the money as
9 fuel prices fall. Many utilities have found themselves holding QF contracts
10 struck at forecast avoided cost rates that did not anticipate the subsequent gas
11 price declines that actually occurred. A tolling agreement structure mitigates the
12 risk to DEC customers that the energy from Cherokee will be out of market due
13 to gas price changes.

14 **23. Q. Please describe the second advantage of the tolling arrangement.**

15 A. The tolling arrangement also enhances the efficiency of DEC's overall dispatch
16 of generation resources. Many QF contracts are structured on a must-take basis
17 and pose a risk to the host utility that the must-take energy will be more costly
18 than other energy available to it at the time of unit commitment or in real time.
19 The tolling agreement does not pose this risk as it gives DEC full dispatch
20 flexibility, assuring that DEC will only operate the power plant when economic
21 dispatch calls for such operation.

22 **24. Q. Does it surprise you that DEC did not propose a tolling agreement**
23 **structure?**

24 A. Yes. It is surprising to me that DEC made its offer as a fixed \$/MWh price. For
25 the reasons noted above, such an offer would not protect customers as well as
26 the tolling agreement structure. It would also invite dispatch inefficiencies in

1 situations when the new PURPA contract was in the money for Cherokee but
2 Duke had other resources available that could provide energy at a lower cost
3 than Cherokee.

4 **25. Q. Is it possible to convert DEC's fixed per megawatt hour energy pricing into**
5 **the payment structure for a tolling arrangement akin to Cherokee's prior**
6 **PURPA contract with DEC?**

7 A. Yes. The tolling structure provides Cherokee with a fixed payment in \$/kW-
8 year terms, paid on a monthly basis—a payment that effectively covers all the
9 fixed costs of the plant including capital costs. The peak and off-peak avoided
10 energy rates provided by DEC can also be expressed in \$/kW-year terms using
11 an understanding of the value energy from Cherokee provides to the DEC
12 system.

13 **26. Q. What are the results of your converting the DEC fixed per megawatt hour**
14 **energy rates into a tolling structure?**

15 A. The peak and off-peak fixed per MWh energy rates DEC offered in October
16 2018 translate to annual compensation of \$63/kW-year, according to my
17 preliminary calculations.⁷

18 **27. Q. Does the payment of \$63/kW-year represent a reasonable rate for Cherokee**
19 **based on its commitment of capacity to DEC as of September 2018?**

20 A. No. This rate would only compensate Cherokee for DEC's avoided energy
21 costs. As I explain above, Cherokee should be compensated for avoided
22 capacity costs—in addition to avoided energy costs—due to Cherokee's

⁷ The calculation of a \$/kW-year payment in the existing PPA is quite detailed. NERA simplified the calculation to translate the \$/MWh rates from the October 2018 Offer Letter into an approximate \$/kW-year payment similar to the terms of the existing PPA. While I do not expect the results of a calculation with less simplifying assumptions to result in a materially different rate, I reserve the right to update my calculation should a more precise analysis be needed.

1 capacity being fully dispatchable by DEC, thereby permitting DEC to defer or
2 avoid other investments.

3 In order for the rate paid to Cherokee to reflect both the energy and capacity
4 value provided to DEC, a capacity value must be added to the rate offered by
5 DEC to Cherokee in October 2018. As an indicative value, I relied upon the
6 2016 approved capacity prices for DEC's standard offer QF rate as specified in
7 Schedule PP. The capacity prices approved by the Commission in 2016 are the
8 rates DEC was paying to other QFs as of October 2018. Those capacity prices
9 were stated as \$/MWh prices, and were to be paid during a specific set of peak
10 hours. In order to put these capacity values into the tolling structure of
11 Cherokee's prior PURPA contract, I translated them into \$/kW-year payments.
12 Compensation to Cherokee for DEC's avoided capacity cost, using the
13 Commission-approved QF rates for capacity, is \$47/kW-year based only on the
14 avoided capacity value. Adding this to the \$63/kW-year payment for avoided
15 energy costs results in a total payment to Cherokee of \$110/kW-year, inclusive
16 of compensation for start costs and Cherokee's fixed operations and
17 maintenance costs.⁸ I provide more details regarding this calculation in the
18 Appendix to my Direct Testimony.

19 **28. Q. Please summarize your view of the calculated \$110/kW-year payment to**
20 **Cherokee.**

21 A. The \$110/kW-year result represents a fair and reasonable rate for Cherokee
22 under a tolling agreement, based on Cherokee's commitment of capacity to DEC
23 in September 2018 and evidence available regarding DEC's then avoided cost
24 forecasts.

⁸ If the new PURPA contract were to provide for explicit payment of start costs or fixed operations and maintenance costs, the baseline capacity charge would be reduced accordingly.

1 **29. Q. Is it reasonable to fashion a new tolling arrangement for Cherokee, when**
 2 **DEC is only offering fixed per-megawatt-hour energy pricing?**

3 A. Yes, it is reasonable from both a PURPA and ratemaking perspective. Under
 4 PURPA, a PPA may be fashioned to reflect particular attributes of the QF.⁹ The
 5 previous contract afforded DEC flexibility to call on the Cherokee facility
 6 whenever it was needed, which makes this cogeneration facility different from
 7 intermittent QF resources that cannot be dispatched on demand. As the rates I
 8 calculate for Cherokee are consistent with the avoided cost standards and
 9 practices under PURPA, they are reasonable from a regulatory perspective.

10 **V. SUMMARY**

11 **30. Q. Please summarize your conclusions regarding the instant dispute before**
 12 **this Commission.**

13 A. I find that:

- 14 • PURPA encourages QF development and operation by providing a
 15 market for the output of QFs.
- 16 • It would have been reasonable for DEC to offer Cherokee a new contract
 17 beginning January 1, 2021 under a tolling arrangement structure similar
 18 to Cherokee's 2013 PURPA contract.
- 19 • My preliminary estimates indicate that a just and reasonable rate should
 20 have been approximately \$110/kW-year, reflecting DEC's avoided
 21 energy and capacity costs as of September 2018.

22 I reserve the right to update my testimony and opinions in this matter as new
 23 information becomes available to me.

⁹ A state commission can take into account the "ability of the electric utility to dispatch the qualified facility," "the expected or demonstrated reliability of the qualifying facility", as well as the terms of the legally enforceable obligation, including the duration of the obligation..." See 18 C.F.R. 292.304(e)(2)(ii)(A, B and C).

1 **31. Q. Does this conclude your pre-filed testimony?**

2 A. Yes.

3 May 2021



4 Kurt G. Strunk

APPENDIX: TRANSLATION OF \$/MWH RATES INTO \$/KW-YEAR RATES FOR CHEROKEE TOLLING

I calculate the approximate rate to be applied in a tolling agreement akin to the existing PPA between Cherokee and DEC. I used the following methodology to calculate a \$/kW-year rate for Cherokee based on DEC's avoided costs as of October 2018.

- 1) I estimated Cherokee's hourly generation for a future year by averaging Cherokee's historical hourly generation for the calendar years 2018, 2019, and 2020.
- 2) I calculated Cherokee's avoided energy payments in each hour based on the generation forecast from Step (1) and the avoided peak and off-peak energy payments from DEC's October 2018 Offer Letter (\$40.71/MWh for peak hours and \$33.50/MWh for off-peak hours, applicable in the hours and days as defined in the October 2018 Offer Letter). The historical generation from 2018 to 2020 includes numerous hours, particularly in winter months, where Cherokee delivered more than 86 MW to DEC, with generation up to and sometimes even exceeding 100 MW. By including these higher generation values in my modeling, I credit Cherokee for the value it provides to DEC when it generates above 86 MW.
- 3) To make the avoided energy payments comparable to the \$/kW-year payment under the existing PPA, I must subtract off Cherokee's forecasted fuel and VOM costs. Under the existing PPA, DEC pays for Cherokee's fuel, and Cherokee receives a separate VOM payment. Although the existing PPA also provides for start cost compensation, I have not made an adjustment in this regard and instead assume that the resulting capacity charge would cover Cherokee's start costs.
- 4) I forecasted Cherokee's 2021 fuel costs.¹⁰
 - a. I calculated Cherokee's hourly gas needs by multiplying the hourly generation from Step (1) by Cherokee's average historical heat rate.
 - b. I multiplied the gas needs from Step (4a) by the gas price from the applicable month in the Transco Zone 4 forward curve dated October 15, 2018, plus an assumed \$0.30/MWh adder for transport costs to the Cherokee facility. The existing PPA specifies Transco Zone 4 as the applicable fuel price. The October 15, 2018 forward curve reflects

¹⁰ Although I relied on the 2021 fuel costs, I understand that DEC's October 2018 offer anticipated a five-year term. DEC has since offered a ten-year term. The October 2018 forward gas curve does not suggest that the pricing would be significantly different for one PPA term as compared to another.

1 anticipated Cherokee prices around the time of October 2018 Offer
2 Letter.

- 3 5) I forecasted VOM payments to Cherokee by extending the VOM payment rate
4 under the existing PPA. I multiplied the VOM payment rate for a sample year
5 of 2021 by the future generation from Step (1).
- 6 6) I summed the avoided energy payments from Step (2) and then subtracted the
7 fuel and VOM payments from Step (4) and Step (5) to arrive at net avoided
8 energy payments.
- 9 7) I divided the net avoided energy payments from Step (6) by the Contract
10 Capacity under the then-existing PPA: 86,000 kW. This resulted in a \$63/kW-
11 year capacity charge based only on DEC's avoided energy costs.
- 12 8) I forecasted avoided DEC capacity costs based on DEC's 2016 approved
13 avoided capacity cost values—which are expressed on a dollar per MWh basis,
14 with separate payment rates for in summer peak hours and winter peak hours
15 (and with no avoided capacity value in off-peak hours). I multiplied these
16 avoided capacity cost payment rates by the Cherokee generation from 2018, to
17 arrive at payments to Cherokee based on DEC's avoided capacity costs.
- 18 9) Summing the payments from Step (8) and dividing by Cherokee's 86,000 kW
19 resulted in a \$47/kW-year payment.
- 20 10) Summing the payments from Step (7) and Step (9) resulted in a total payment of
21 \$110/kW-year.

22 See Table 1 below for a summary of the capacity charge calculation.

Table 1: Summary Tolling Agreement Capacity Charge Calculation

Row	Item	Formula	Value	Units
(1)	Cherokee Contract Capacity		86	MW
(2)	Estimated Cherokee Net Revenues from Oct 2018 Offer (Avoided Energy Costs) ¹¹		\$5.4	million
(3)	Implied Tolling Agreement Capacity Charge from Avoided Energy ¹²	(2)/(1)	\$63	/kW-year
(4)	Estimated Cherokee Revenues based on DEC Standard Offer Capacity Credits		\$4.1	million
(5)	Implied Tolling Agreement Capacity Charge from Avoided Capacity	(4)/(1)	\$47	/kW-year
(6)	Implied Tolling Agreement Capacity Charge from Avoided Energy and Capacity	(3)+(5)	\$110	/kW-year

¹¹ Revenue from the 2018 DEC Offer Energy Rates assuming an average year of Cherokee generation from 2018 to 2020 period, less the estimated Cherokee gas costs to produce that generation (2021 forward gas prices plus transportation), less the estimated VOM payments for that generation based on the VOM rate in the existing PPA.

¹² Revenue from the 2016 DEC Standard Offer Capacity Rates available under Schedule PP, assuming the same generation in the Row (2) calculation.

Exhibit KGS-01 – CV of Kurt G. Strunk

1

KURT G. STRUNK **Managing Director**

Mr. Strunk is an expert in applied finance and energy matters with over 25 years of experience in international arbitration, complex commercial litigation, and regulatory proceedings. Mr. Strunk is recommended as a leading energy expert by *Who's Who Legal*. He has been retained as an expert to testify in arbitrations, before the Federal Energy Regulatory Commission, US Tax Court, US Federal Court, and US Bankruptcy Court, the National Energy Board in Canada, as well as state and provincial public utilities boards in the US and Canada. His testimonies have addressed construction delay, asset and contract valuation, breach-of-contract damages, the proportionality of stipulated liquidated damages provisions, cost of capital and discount rates, just and reasonable rates, regulatory accounting, prudence, cost of service, regulatory reform, pipeline access, retail market issues, as well as trading and risk management.

In electric power, Mr. Strunk has advised governments, regulators, and energy companies on industry structure, regulation, and sector reform in North America, South America, Europe, Australia, Asia and Africa. In generation, his assignments often involve analysis of new power generation resources and contracts. He has advised on the development of independent power contracts, fuel supply arrangements and competitive solicitations across the globe. He served as a key member of NERA's team advising on electric sector reform and power market design in Mexico, a project he carried out in the Spanish language. He routinely values electricity sector companies and assets in the context of disputes and advisory assignments.

In the oil and gas sectors, Mr. Strunk has consulted on rate matters, mergers and acquisitions, restructurings, contract disputes, valuation, trading, risk management, and product pricing. He has valued oil and gas assets and contracts in litigated disputes on behalf of major firms in the petroleum sector. He advised sellers of LNG in disputes with buyers (prior to international arbitration) and performed extensive quantitative analysis around appropriate prices and damages in the event of breach. He has served as an expert in regulatory hearings relating to pipeline tariffs in Canada and the United States. He has also carried out studies of the reasonableness of gas supply agreements in various jurisdictions and quantified damages in connection with the early termination of such agreements.

Mr. Strunk's assignments often require that he determines the appropriate return on equity capital for energy firms. He has calculated and supported required rates of return for power generators, gas distribution utilities, electric distribution and transmission companies, and other energy firms in the context of traditional tariff reviews for regulated entities, litigation and advisory work. Mr. Strunk frequently collaborates with NERA's Securities and Finance Practice. He has addressed liability and damages in broker-dealer disputes, and in securities class actions.

Education

1997	INSEAD (The European Institute of Business Administration), Fontainebleau, France MBA, with Distinction, 1997
1993	VASSAR COLLEGE, New York, USA B.A., Economics, General and Departmental Honors

Career Details

2021-present	NERA ECONOMIC CONSULTING <u>Managing Director</u> , New York
2017-2020	NERA ECONOMIC CONSULTING <u>Director</u> , New York
2012–2016	NERA ECONOMIC CONSULTING <u>Vice President</u> , New York
2005–2012	NERA ECONOMIC CONSULTING <u>Senior Consultant</u> , New York
2003–2004	NERA ECONOMIC CONSULTING <u>Outside Consultant</u> , New York
2000–2002	NERA ECONOMIC CONSULTING <u>Senior Consultant</u> , New York
1998–1999	NERA ECONOMIC CONSULTING <u>Senior Analyst</u> , New York
1996	NERA ECONOMIC CONSULTING <u>Associate Analyst</u> , New York
1994–1995	NERA ECONOMIC CONSULTING <u>Research Associate</u> , New York
1993–1994	NERA ECONOMIC CONSULTING <u>Research Assistant</u> , New York
1992	GÉNÉRALE DE BANQUE <u>Research Assistant</u> , Brussels

Languages

English:	mother tongue
French:	fluent
Spanish:	fluent

Project Experience

EXPERT TESTIMONY

- 2021 Backup/Top-up Tariff Testimony, Nova Scotia Municipal Utilities**
Expert witness regarding Nova Scotia Power Incorporated application to amend its Wholesale Market Backup / Top-up Service Tariff. April 16, 2021,
- 2021 NV Energy Gas Trading / Prudence**
Direct Testimony before the Nevada Public Utilities Commission, on behalf of Nevada Power Company, examining whether the trades in its natural gas trading book were prudent. March 1, 2021.
- 2021 NV Energy Gas Trading / Prudence**
Direct Testimony before the Nevada Public Utilities Commission, on behalf of Sierra Pacific Power Company, examining whether the trades in its natural gas trading book were prudent. March 1, 2021.
- 2020 Wisconsin Public Service Commission Return of Equity**
Surrebuttal Testimony before the Wisconsin Public Service Commission on behalf of Verso Corporation and Verso Minnesota Wisconsin LLC addressing the fair return on equity for Consolidated Water Power Company. October 26, 2020
- 2020 Wisconsin Public Service Commission Return of Equity**
Rebuttal Testimony before the Wisconsin Public Service Commission on behalf of Verso Corporation and Verso Minnesota Wisconsin LLC addressing the fair return on equity for Consolidated Water Power Company. October 20, 2020
- 2020 Wisconsin Public Service Commission Return of Equity**
Direct Testimony before the Wisconsin Public Service Commission on behalf of Verso Corporation and Verso Minnesota Wisconsin LLC

Kurt G. Strunk

addressing the fair return on equity for Consolidated Water Power Company. October 6, 2020

2020

NV Energy**Cost of Capital**

Rebuttal Testimony before the Nevada Public Utilities Commission, on behalf of NV Energy, presenting analysis on the cost of capital. September 18, 2020.

2020

North Carolina Utilities Commission**Regulatory Policy**

Oral Testimony before the North Carolina Utilities Commission, on behalf of Apple, Facebook and Google, presenting analysis on various regulatory matters. August 28, 2020.

2020

NV Energy**Cost of Capital**

Direct Testimony before the Nevada Public Utilities Commission, on behalf of NV Energy, presenting analysis on the cost of capital. June 1, 2020.

2020

NV Energy**Cost of Gas / Prudence**

Direct Testimony before the Nevada Public Utilities Commission, on behalf of Nevada Power Company, presenting analysis on whether its natural gas commodity trading was consistent with prudent utility practice. March 1, 2020.

2020

NV Energy**Cost of Gas / Prudence**

Direct Testimony before the Nevada Public Utilities Commission, on behalf of Sierra Pacific Power Company, presenting analysis on whether NV Energy's natural gas commodity trading was consistent with prudent utility practice. March 1, 2020.

2019

Municipal Light & Power, Chugach Electric Association, Inc. Acquisition

Oral Testimony before the Regulatory Commission of Alaska on behalf of Chugach Electric Association, Inc., addressing the acquisition of Municipal Light & Power by Chugach Electric and post-acquisition tariff structures. November 5, 2019.

- 2019** **Southwestern Electric Power Company**
Prudence of Investment in Power Generation Facilities
 Sur-Surrebuttal testimony before the Arkansas Public Service Commission on behalf of Southwestern Electric Power Company addressing the prudence of certain investments in coal-fired power generation facilities. October 2, 2019.
- 2019** **Central Maine Power Company**
Marginal Cost Study
 Oral Testimony before the State of Maine Public Utilities Commission on behalf of Central Maine Power Company in its 2018 Distribution Rate Case, addressing time-of-use pricing, marginal cost estimation and cost recovery for distribution network investment. October 2, 2019.
- 2019** **NV Energy**
Cost of Capital
 Rebuttal Testimony before the Nevada Public Utilities Commission, on behalf of Sierra Pacific Power Company, addressing the cost of capital for the Company's electric division. September 19, 2019.
- 2019** **Municipal Light & Power, Chugach Electric Association, Inc.**
Acquisition
 Oral Testimony before the Regulatory Commission of Alaska on behalf of Chugach Electric Association, Inc., addressing the acquisition of Municipal Light & Power by Chugach Electric. September 5 & 6, 2019.
- 2019** **Corporate Commission of Arizona**
 Oral Testimony on behalf of Grand Canyon State Electric Cooperative Association, Inc. before the Corporate Commission of Arizona towards contracts with Qualifying Facilities. August 27, 2019.
- 2019** **Central Maine Power Company**
Cost Study for Electric Distributor
 Surrebuttal Testimony before the State of Maine Public Utilities Commission on behalf of Central Maine Power Company in its 2018 Distribution Rate Case, addressing the theory of electric utility costing and the implementation of a cost study for the distribution network. August 22, 2019.

Kurt G. Strunk

- 2019 Municipality of Anchorage (ML&P), Chugach Electric Association Reasonableness of Proposed Merger**
Reply Testimony Before the Regulatory Commission of Alaska addressing the acquisition of Municipal Light & Power by Chugach Electric. August 2, 2019.
- 2019 Chugach Electric Associate Inc. Cost of Capital**
Oral Testimony Before the Regulatory Commission of Alaska addressing the cost of capital for Chugach Electric. July 15, 2019.
- 2019 NV Energy Cost of Capital**
Direct Testimony before the Nevada Public Utilities Commission, on behalf of Sierra Pacific Power Company, addressing the cost of capital for the Company's electric division. June 3, 2019.
- 2019 Avangrid NY Marginal Cost Study**
Direct Testimony before the New York State Public Service Commission on behalf of New York State Electric & Gas Corporation, providing marginal cost estimates for purposes of informing reasonable electric and gas distribution rates. May 20, 2019.
- 2019 Avangrid NY Marginal Cost Study**
Direct Testimony before the New York State Public Service Commission on behalf of Rochester Gas & Electric Corporation, providing marginal cost estimates for purposes of informing reasonable electric and gas distribution rates. May 20, 2019.
- 2019 Central Maine Power Company Marginal Cost Study**
Rebuttal Testimony before the State of Maine Public Utilities Commission on behalf of Central Maine Power Company in its 2018 Distribution Rate Case, addressing time-of-use pricing, marginal cost estimation and cost recovery for distribution network investment. April 25, 2019.

- 2019 Municipality of Anchorage (ML&P), Chugach Electric Association Reasonableness of Proposed Merger**
Pre-filed direct testimony on behalf of Chugach Electric Association, Inc. before the Regulatory Commission of Alaska supporting Chugach's proposed acquisition of ML&P from the Municipality of Anchorage. Testimony addresses the valuation of ML&P, the reasonableness of the purchase price, forecast synergy savings, market pricing for a related Power Purchase Agreement, and the tangible benefits that will accrue to ratepayers as a result of the merger. April 1, 2019.
- 2019 Public Service Company of New Mexico Reasonableness of Power Purchase Agreement**
Affidavit before the Federal Energy Regulatory Commission including a benchmarking analysis of a solar power purchase agreement under FERC's *Edgar* and *Ocean States* standards. March 15, 2019.
- 2019 NV Energy Cost of Gas / Prudence**
Direct Testimony before the Nevada Public Utilities Commission, on behalf of NV Energy, addressing the reasonableness of the Company's natural gas trading. March 1, 2019.
- 2019 Southwestern Electric Power Company Prudence of Investment in Power Generation Facilities**
Direct Testimony before the Arkansas Public Service Commission on behalf of Southwestern Electric Power Company addressing the prudence of the company's investments in the Dolet Hills Power Plant. February 28, 2019.
- 2018 PacifiCorp Cost of Capital**
Rebuttal Testimony before the California Public Utilities Commission, on behalf of PacifiCorp, on the cost of capital in the Company's rate case, November 20, 2018.
- 2018 LS Power Company Generation Capacity Market Design**
Reply Affidavit (w/Willis Geffert), on behalf of LS Power Associates, L.P., before the Federal Energy Regulatory Commission, addressing flaws

Kurt G. Strunk

in the existing capacity market construct in the PJM Interconnection.
November 6, 2018

2018

LS Power Company**Generation Capacity Market Design**

Affidavit (w/Willis Geffert), on behalf of LS Power Associates, L.P., before the Federal Energy Regulatory Commission, addressing flaws in the existing capacity market construct in the PJM Interconnection. October 2, 2018.

2018

Maui Electric Company**Power Generation Costs, Incentives, Fuel Adjustment Clauses**

Rebuttal Testimony before the Hawai'i Public Utilities Commission on behalf of Maui Electric Company, Inc., addressing matters pertaining to its fuel costs and Energy Cost Adjustment Clause, June 22, 2018.

2018

PacifiCorp**Cost of Capital**

Direct Testimony before the California Public Utilities Commission, on behalf of PacifiCorp, on the cost of capital in the Company's rate case, April 12, 2018.

2018

Hawaiian Electric Company**Power Generation Costs, Incentives, Fuel Adjustment Clauses**

Affidavit before the Hawai'i Public Utilities Commission on behalf of Hawaiian Electric Company, Inc., addressing matters pertaining to Hawaiian Electric's Energy Cost Adjustment Clause, April 10, 2018.

2018

North Carolina Utilities Commission Raleigh**Tax, Regulatory and Utility Financial Matters**

Supplemental testimony before the State of North Carolina Utilities Commission Raleigh, presenting opinions on various tax, economic,

regulatory and financial matters in the Duke Energy Carolinas General Rate Case, March 20, 2018.

- 2018** **Hawaiian Electric Company**
Power Generation Costs, Incentives, Fuel Adjustment Clauses
 Supplemental Testimony before the Public Utilities Commission of Hawaii, presenting opinions on fuel costs and energy cost adjustment clauses, February 14, 2018.
- 2018** **North Carolina Utilities Commission Raleigh**
Regulation and Utility Finance
 Pre-filed testimony before the State of North Carolina Utilities Commission Raleigh, presenting opinions on various economic, regulatory and financial matters in the Duke Energy Carolinas General Rate Case, January 23, 2018.
- 2018** **Hawaiian Electric Company**
Power Generation, Incentive Ratemaking, Fuel Adjustment Clauses
 Rebuttal Testimony before the Public Utilities Commission of Hawaii, addressing fuel costs and the appropriateness of the current and proposed Energy Cost Adjustment Clause (“ECAC”), January 05, 2018.
- 2017** **Nevada Power Company**
Cost of Capital
 Oral testimony before the Public Utilities Commission of Nevada on behalf of Nevada Power Company presenting his analysis and conclusions on the cost of capital. November 1, 2017.
- 2017** **Energía Limpia de Guatemala, S.A.**
EPC Contracts, Liquidated Damages, Power Industry Practices
 Oral Testimony before the ICC Court of Arbitration, ICC Case No. 21361/RD, on behalf of Energía Limpia de Guatemala, S.A., addressing

the proportionality of liquidated damages in a turnkey EPC contract, October 25, 2017.

2017

Nevada Power Company

Cost of Capital

Rebuttal testimony before the Public Utilities Commission of Nevada on behalf of Nevada Power Company presenting on the cost of capital, September 26, 2017.

2017

Energía Limpia de Guatemala, S.A.

EPC Contracts, Liquidated Damages, Power Industry Practices

Pre-filed Expert Report before the ICC Court of Arbitration (w/Willis Geffert), ICC Case No. 21361/RD, on behalf of Energía Limpia de Guatemala, S.A., addressing the proportionality of liquidated damages in a turnkey EPC contract, September 15, 2017.

2017

Hawai'i Electric Light

Power Generation, Incentive Ratemaking, Fuel Adjustment Clauses

Rebuttal Testimony before the Hawai'i Public Utilities Commission, on behalf of Hawai'i Electric Light, addressing alternative incentive mechanisms for the Company's power generation fleet, fuel costs, and the reasonableness of the Company's proposed ECAC, June 23, 2017.

2017

Southwestern Electric Power Company

Prudence of Investment in Power Generation Facilities

Oral Testimony before the Public Utility Commission of Texas on behalf of Southwestern Electric Power Company addressing the prudence of the company's investments in the Dolet Hills Power Plant, June 15, 2017.

2017

NV Energy

Cost of Capital

Direct Testimony before the Nevada Public Utilities Commission, on behalf of Nevada Power Company, addressing the cost of capital for the Company, June 5, 2017.

2017

Southwestern Electric Power Company

Prudence of Investment in Power Generation Facilities

Rebuttal Testimony before the Public Utilities Commission of Texas, on behalf of Southwestern Electric Power Company, addressing the prudence

of retrofit investments in certain electricity generation facilities, May 19, 2017.

- 2017** **North Carolina Utilities Commission**
Power Contract Design, Financing New Power Plants
 Direct Testimony before the North Carolina Utilities Commission, on behalf of North Carolina Sustainable Energy Association, addressing the biennial determination of avoided cost rates for electric utility purchases from qualifying facilities, March 28, 2017.
- 2017** **NV Energy**
Cost of Gas / Prudence
 Direct Testimony before the Nevada Public Utilities Commission, on behalf of NV Energy, addressing the reasonableness of the Company's natural gas trading, March 1, 2017.
- 2016** **NV Energy**
Cost of Capital
 Rebuttal Testimony before the Nevada Public Utilities Commission, on behalf of Sierra Pacific Power Company, addressing the cost of capital for the Company's electric and gas divisions, September 23, 2016.
- 2016** **Hawai'i Electric Light**
Power Generation, Incentive Ratemaking, Fuel Adjustment Clauses
 Direct Testimony before the Hawai'i Public Utilities Commission, on behalf of Hawai'i Electric Light, addressing alternative incentive mechanisms for the Company's power generation fleet, fuel costs, and the reasonableness of the Company's proposed ECAC, September 19, 2016.
- 2016** **NV Energy**
Cost of Capital
 Certification Testimony before the Nevada Public Utilities Commission, on behalf of Sierra Pacific Power Company, addressing the cost of capital for the Company's electric and gas divisions, August 2, 2016.
- 2016** **NV Energy**
Cost of Capital
 Direct Testimony before the Nevada Public Utilities Commission, on behalf of Sierra Pacific Power Company, addressing the cost of capital for the Company's electric and gas divisions, June 6, 2016.

- 2016** **PacifiCorp**
Cost of Capital
 Oral Testimony before the Washington Utilities and Transportation Commission, on behalf of PacifiCorp, on the cost of capital in the Company's expedited rate filing (Docket UE-152253), May 2, 2016.
- 2016** **Confidential Client**
Damages under Wind Power Purchase Agreement
 Expert Report in arbitration on the valuation of damages under a PPA backed by a wind farm, with a particular focus on the reasonableness of the liquidated damages cap, April 25, 2016.
- 2016** **Municipality of Anchorage (ML&P), Chugach Electric Association**
Valuation of Gas Field and Reasonableness of Acquisition Price
 Oral Testimony before the Regulatory Commission of Alaska on the reasonableness of the proposed acquisition of ConocoPhillips' working interest in the Beluga River Unit, April 19, 2016.
- 2016** **PacifiCorp**
Cost of capital
 Rebuttal Testimony before the Washington Utilities and Transportation Commission, on behalf of PacifiCorp, on the cost of capital in the Company's expedited rate filing (Docket UE-152253), April 7, 2016.
- 2016** **NV Energy**
Cost of Gas / Prudence
 Direct Testimony before the Nevada Public Utilities Commission, on behalf of NV Energy, addressing the reasonableness of the Company's natural gas purchases, March 1, 2016.
- 2016** **Alliance to Protect Nantucket Sound**
Financing of off-shore wind farm
 Oral Testimony before the Energy Facilities Siting Board of the Commonwealth of Massachusetts on the financeability of the Cape Wind project, January 25, 2016.
- 2015** **PacifiCorp**
Cost of capital
 Direct Testimony before the Washington Utilities and Transportation Commission, on behalf of PacifiCorp, on the cost of capital, November 24, 2015.

- 2015** **Chugach Electric Association, Inc.**
Regulatory principles for cost allocation
 Oral testimony before the Regulatory Commission of Alaska, addressing the regulatory treatment of gas found by Cook Inlet Natural Gas Storage Alaska LLC, August 31, 2015.
- 2015** **Baltimore Gas & Electric Company**
Risks and rate of return for retail electricity business
 Oral Testimony before the Maryland Public Service Commission, *in the Matter of Baltimore Gas & Electric's Application to Recover Cash Working Capital for Standard Offer Service*, Case No. 9221, August 5, 2015.
- 2015** **Baltimore Gas & Electric Company**
Risks and rate of return for retail electricity business
 Rebuttal Testimony before the Maryland Public Service Commission, *in the Matter of Baltimore Gas & Electric's Application to Recover Cash Working Capital for Standard Offer Service*, Case No. 9221, July 22, 2015.
- 2015** **Chugach Electric Association, Inc.**
Regulatory principles for cost allocation
 Pre-filed testimony before the Regulatory Commission of Alaska, addressing the regulatory treatment of gas found by Cook Inlet Natural Gas Storage Alaska LLC, June 5, 2015.
- 2015** **ATX Southwest, LLC.**
Cost of Capital
 Direct Testimony before the Federal Energy Regulatory Commission, on behalf of ATX Southwest, addressing return on equity, May 28, 2015.
- 2015** **Chugach Electric Association, Inc.**
Cost of Capital
 Responsive Testimony before the Regulatory Commission of Alaska, addressing return on equity for the Enstar Natural Gas Company, May 15, 2015.
- 2015** **Baltimore Gas & Electric Company**
Risks and rate of return for retail electricity business
 Testimony before the Maryland Public Service Commission, *in the Matter of Baltimore Gas & Electric's Application to Recover Cash Working Capital for Standard Offer Service*, Case No. 9221, April 22, 2015.

- 2015** **NV Energy**
Cost of Gas / Prudence
 Direct Testimony before the Nevada Public Utilities Commission, on behalf of NV Energy, addressing the reasonableness of the Company's natural gas purchases, March 1, 2015.
- 2014** **PacifiCorp**
Cost of capital
 Oral Testimony before the Washington Utilities and Transportation Commission, on behalf of PacifiCorp, on the cost of capital in the Company's general rate case, December 16, 2014.
- 2014** **PacifiCorp**
Cost of capital
 Rebuttal Testimony before the Washington Utilities and Transportation Commission, on behalf of PacifiCorp, on the cost of capital in the Company's general rate case, November 21, 2014.
- 2014** **PacifiCorp**
Cost of capital
 Direct Testimony before the Washington Utilities and Transportation Commission, on behalf of PacifiCorp, on the cost of capital in the Company's general rate case, including the effects of transitioning away from coal, April 30, 2014.
- 2014** **Nevada Power Company**
Cost of capital
 Direct Testimony before the Nevada Public Utilities Commission, on behalf of Nevada Power Company, on the cost of capital in the Company's general rate case, April 30, 2014.
- 2015** **NV Energy**
Cost of Gas / Prudence
 Direct Testimony before the Nevada Public Utilities Commission, on behalf of NV Energy, addressing the reasonableness of the Company's natural gas purchases, March 1, 2014.
- 2013** **Sierra Pacific Power Company**
Cost of capital
 Oral testimony, before the Nevada Public Utilities Commission, on behalf of Sierra Pacific Power Company, on the cost of capital for the gas and electric divisions in the Company's general rate case, October 7, 2013.

- 2013** **Sierra Pacific Power Company**
Cost of capital
 Rebuttal Testimony before the Nevada Public Utilities Commission, on behalf of Sierra Pacific Power Company, on the cost of capital for the gas and electric divisions in the Company's general rate case, September 25, 2013.
- 2013** **Market Area Shippers**
(Gaz Métro, Union Gas and Enbridge Gas Distribution)
Contract Renewal Alternatives for Regulated Pipeline Service
 Pre-filed Expert Report, with Jeff Makhholm, before the National Energy Board of Canada, in the Matter of TransCanada's Application for Tariff Amendments, Hearing Order RH-001-2013, July 26, 2013.
- 2013** **Sierra Pacific Power Company**
Cost of capital
 Direct Testimony before the Nevada Public Utilities Commission, on behalf of Sierra Pacific Power Company, on the cost of capital for the gas and electric divisions in the Company's general rate case, June 4, 2013.
- 2013** **NV Energy Operating Companies**
Cost of capital
 Direct Testimony before the Federal Energy Regulatory Commission, on behalf of NV Energy Operating Companies, on the appropriate rate of return for the consolidated transmission system, May 31, 2013.
- 2013** **Public Intervenor**
Wholesale Margins for Regulated Motor Fuels and Heating Oil
 Oral testimony before the New Brunswick Energy and Utilities Board, *In the Matter of an Application by Irving Oil Marketing GP and Irving Oil Commercial GP requesting an increase in the wholesale margins for motor fuels and heating oil*, January 29, 2013.
- 2013** **Public Intervenor**
Power sector modelling, deferral account policy, financial analysis
 Oral testimony before the New Brunswick Energy and Utilities Board, *In the Matter of the Point Lepreau Nuclear Generating Station Deferral Account and Section 143.1 of the Electricity Act*, January 15, 2013.
- 2012** **Baltimore Gas & Electric Company**
Potomac Electric Power Company
Power Purchase Agreements, Retail electric competition
 Oral testimony before the Maryland Public Service Commission *In the Matter of Whether New Generation Resources Are Needed to Meet Long-*

Term Demand for Standard Offer Service, Case No. 9214, November 26, 2012.

2012

Public Intervenor

Modelling of coal and oil plants, deferral account, financial analysis

Pre-filed Expert Report before the New Brunswick Energy and Utilities Board *In the Matter of the Point Lepreau Nuclear Generating Station Deferral Account and Section 143.1 of the Electricity Act*, November 26, 2012.

2012

Nevada Power Company

Cost of capital

Pre-filed testimony before the Federal Energy Regulatory Commission in the Nevada Power Company's Transmission Rate Case, October 31, 2012.

2012

Public Intervenor

Wholesale margins for regulated motor fuels and heating oil

Pre-filed Expert Report before the New Brunswick Energy and Utilities Board *In the Matter of an Application by Irving Oil Marketing G.P. and Irving Oil Commercial G.P. Requesting an Increase in the Wholesale Margins for Motor Fuels and Heating Oil*, October 26, 2012.

2012

Nevada Power Company

Prudence of gas costs for 2012

Pre-filed Expert Report before the Nevada Public Utilities Commission *In the Nevada Power Company's 2012 Deferred Energy Filing*, March 1, 2012.

2012

Sierra Pacific Power Company

Prudence of gas costs for 2012

Pre-filed Expert Report before the Nevada Public Utilities Commission *In the Nevada Power Company's 2012 Deferred Energy Filing*, March 1, 2012.

2011

Public Intervenor

Power system loss factors, OATT, transmission regulatory policy

Pre-filed Expert Report before the New Brunswick Energy and Utilities Board *In the Matter of a Review of the Proposed Change to the New Brunswick System Operator's Real Power Loss Factor*, October 31, 2011.

2011

John Hancock

Risk analysis of European power plant leveraged lease

Oral Testimony before the U.S. Tax Court, on behalf of plaintiff in *John Hancock Life Insurance Company and Subsidiaries v. Commissioner of Internal Revenue*, October 24, 2011.

- 2011** **John Hancock**
Risk analysis of European power plant leveraged lease
 Rebuttal Expert Report before the U.S. Tax Court, on behalf of plaintiff in *John Hancock Life Insurance Company and Subsidiaries v. Commissioner of Internal Revenue*, August 19, 2011.
- 2011** **John Hancock**
Risk analysis of European power plant leveraged lease
 Pre-filed Expert Report before the U.S. Tax Court on behalf of plaintiff in *John Hancock Life Insurance Company and Subsidiaries v. Commissioner of Internal Revenue*, July 8, 2011.
- 2011** **Public Intervenor**
OATT, transmission regulatory policy
 Pre-filed Expert Report before the New Brunswick Energy and Utilities Board, *in the Review of the Proposed Changes to the New Brunswick System Operator's Open Access Transmission Tariff*, February 21, 2011.
- 2011** **Public Intervenor**
Power system loss factor, OATT, transmission regulatory policy
 Pre-filed Expert Report before the New Brunswick Energy and Utilities Board, *in the Review of the New Brunswick System Operator's Proposed Change to its Loss Factor*, February 3, 2011.
- 2011** **Baltimore Gas & Electric Company**
Risks and rate of return for retail electricity business
 Oral testimony before the Maryland Public Service Commission, *in the Matter of Baltimore Gas & Electric's Application to Recover Cash Working Capital for Standard Offer Service*, Case No. 9221, January 20, 2011.
- 2010** **Baltimore Gas & Electric Company**
Risks and rate of return for retail electricity business
 Pre-filed Expert Report before the Maryland Public Service Commission, *in the Matter of Baltimore Gas & Electric's Application to Recover Cash Working Capital for Standard Offer Service*, Case No. 9221, September 17, 2010.
- 2010** **Public Intervenor**
Greenfield gas distributor, cost of service, just and reasonable rates
 Oral testimony before the New Brunswick Energy & Utilities Board, in the *Enbridge Gas New Brunswick Rate Case*, March 30, 2010.

- 2010** **Public Intervenor**
Greenfield gas distributor, cost of service, just and reasonable rates
 Pre-filed Expert Report before the New Brunswick Energy and Utilities Board, *in the Matter of Enbridge Gas New Brunswick Rate Case*, March 12, 2010.
- 2009** **Public Intervenor**
Greenfield gas distributor, cost of service, just and reasonable rates
 Oral testimony before the New Brunswick Energy & Utilities Board, *in the Review of Matters related to the Regulation of Enbridge Gas New Brunswick*, October 23, 2009.
- 2009** **Public Intervenor**
Greenfield gas distributor, cost of service, just and reasonable rates
 Pre-filed Expert Report before the New Brunswick Energy and Utilities Board, *in the Matter of the Annual Financial Review of Enbridge Gas New Brunswick Limited Partnership*, August 21, 2009.
- 2009** **Public Intervenor**
Greenfield gas distributor, cost of service, just and reasonable rates
 Oral testimony before the New Brunswick Energy and Utilities Board, *in the Matter of the Annual Financial Review of Enbridge Gas New Brunswick Limited Partnership*, September 15, 2009.
- 2009** **Public Intervenor**
Greenfield gas distributor, cost of service, just and reasonable rates
 Pre-filed Expert Report before the New Brunswick Energy and Utilities Board, *in the Matter of a Review of Matters Related to the Regulation of Enbridge Gas New Brunswick Limited Partnership*, September 21, 2009.
- 2009** **The City of New York**
Cost of service, incentives and taxi lease rates
 Oral testimony in the District Court for the Southern District of New York in *Metropolitan Taxicab Board of Trade et al. v. The City of New York et al.*, on the issue of whether the Taxi and Limousine Commission's new maximum lease rates constitute a fuel efficiency and emissions mandate that would be preempted by Federal law, May 20, 2009.
- 2009** **The City of New York**
Cost of service, incentives and taxi lease rates
 Pre-filed expert Report in the United States District Court for the Southern District of New York in *Metropolitan Taxicab Board of Trade et al. v. The City of New York et al.*, on the issue of whether the Taxi and Limousine Commission's new maximum lease rates constitute a fuel efficiency and emissions mandate that would be preempted by Federal law, May 18, 2009.

- 2009** **Public Intervenor**
Greenfield gas distributor, cost of service, just and reasonable rates
 Oral testimony before the New Brunswick Energy and Utilities Board, *In the Matter of the examination of the formula for Enbridge Gas New Brunswick's market-based rate*, April 23, 2009.
- 2009** **Public Intervenor**
Greenfield gas distributor, cost of service, just and reasonable rates
 Pre-filed Report before the New Brunswick Energy and Utilities Board, *In the Matter of the examination of the formula for Enbridge Gas New Brunswick's market-based rate*, March 26, 2009.
- 2009** **Public Intervenor**
Cost of service, ISO management, OATT transmission policy
 Oral testimony before the New Brunswick Energy and Utilities Board, *In the Matter of the application of the New Brunswick System Operator for changes to its Charges, Rates and Tolls*, March 18, 2009.
- 2009** **Public Intervenor**
Cost of service, ISO management, OATT transmission policy
 Pre-filed Report before the New Brunswick Energy and Utilities Board, *In the Matter of the application of the New Brunswick System Operator for changes to its Charges, Rates and Tolls*, February 24, 2009.
- 2008** **Allegheny Power, Baltimore Gas & Electric**
Integrated resource planning, competitive retail electric markets
 Oral testimony before the Maryland Public Service Commission, *in the Matter of the Commission's Investigation Of Investor-Owned Electric Companies' Standard Offer Service for Residential and Small Commercial Customers in Maryland*, Case No. 9117, December 15, 2008.
- 2008** **Allegheny Power, Baltimore Gas & Electric**
Integrated resource planning, competitive retail electric markets
 Pre-filed Report before the Maryland Public Service Commission, *in the Matter of the Commission's Investigation Of Investor-Owned Electric Companies' Standard Offer Service for Residential and Small Commercial Customers in Maryland*, Case No. 9117, October 1, 2008.
- 2008** **Public Intervenor**
Ratemaking for greenfield gas distributor
 Oral testimony before the New Brunswick Energy and Utilities Board, *In the Matter of an application by Enbridge Gas New Brunswick for changes to its Charges, Rates and Tolls*, March 27, 2008.

- 2008** **Public Intervenor**
Ratemaking for greenfield gas distributor
 Pre-filed Report before the New Brunswick Energy and Utilities Board, *In the Matter of an application by Enbridge Gas New Brunswick for changes to its Charges, Rates and Tolls*, March 10, 2008.
- 2007** **Public Intervenor**
Prudence, just and reasonable standard, affiliate transactions
 Oral testimony before the New Brunswick Energy and Utilities Board, *In the Matter of an application by the NBP Distribution & Customer Service Corporation (Disco) for changes to its Charges, Rates and Tolls*, December 18, 2007.
- 2007** **Public Intervenor**
Nuclear power plant Cost of Service
 Pre-filed Report before the New Brunswick Board of Commissioners of Public Utilities, *In the Matter of an application by the NBP Distribution & Customer Service Corporation (Disco) for changes to its Charges, Rates and Tolls*, December 7, 2007.
- 2007** **Public Intervenor**
Prudence of power generation costs
 Pre-filed Report before the New Brunswick Board of Commissioners of Public Utilities, *In the Matter of an application by the NBP Distribution & Customer Service Corporation (Disco) for changes to its Charges, Rates and Tolls*, November 5, 2007.
- 2007** **Public Intervenor**
Prudence of power generation costs
 Oral testimony before the New Brunswick Energy and Utilities Board, *In the Matter of an application by the NBP Distribution & Customer Service Corporation (Disco) for changes to its Charges, Rates and Tolls*, June 21, 2007.
- 2007** **Public Intervenor**
Prudence of power generation costs
 Pre-filed Report before the New Brunswick Energy and Utilities Board, *In the Matter of an application by the NBP Distribution & Customer Service Corporation (Disco) for changes to its Charges, Rates and Tolls*, June 14, 2007.
- 2006** **Brookfield Energy Marketing Inc.**
Valuation of power purchase agreement and power plant

Deposition testimony before the United States Bankruptcy Court for the District of Maryland, on behalf of Brookfield Energy Marketing Inc., *In re: USGen New England, Inc.*, Debtor, Case No. 03-30465, May 22, 2006.

2006

Brookfield Energy Marketing Inc.

Valuation of power purchase agreement and power plant

Rebuttal Report before the United States Bankruptcy Court for the District of Maryland, on behalf of Brookfield Energy Marketing Inc., *In re: USGen New England, Inc.*, Debtor, Case No. 03-30465, May 5, 2006.

2006

Brookfield Energy Marketing Inc.

Valuation of power purchase agreement and power plant

Expert Report before the United States Bankruptcy Court for the District of Maryland, on behalf of Brookfield Energy Marketing Inc., *In re: USGen New England, Inc.*, Debtor, Case No. 03-30465, March 29, 2006.

2006

Public Intervenor

Application of the prudence standard to affiliate transactions

Oral testimony before the New Brunswick Board of Commissioners of Public Utilities, *In the Matter of an application by the NBP Distribution & Customer Service Corporation (Disco) for changes to its Charges, Rates and Tolls*, March 14, 2006.

2006

Public Intervenor

Application of the prudence standard to affiliate transactions

Pre-filed Report with Eugene Meehan before the New Brunswick Board of Commissioners of Public Utilities, *In the Matter of an application by the NBP Distribution & Customer Service Corporation (Disco) for changes to its Charges, Rates and Tolls*, January 31, 2006.

2005

Dayton Power & Light Company

Retail pricing for default service customers and option valuation

Oral testimony at hearings in Ohio Public Utilities Commission Case No. 05-276-EL-AIR, November 8 and 14 2005.

2005

Dayton Power & Light Company

Retail pricing for default service customers and option valuation

Deposition testimony in Ohio Public Utilities Commission Case No. 05-276-EL-AIR, November 8, 2005.

2005

Dayton Power & Light Company

Retail pricing for default service customers and option valuation

Testimony in Ohio Public Utilities Commission, in Support of Stipulation filed in support of Dayton's proposed settlement Case No. 05-276-EL-AIR, November 4, 2005.

Kurt G. Strunk

- 2005** **Dayton Power & Light Company**
Retail pricing for default service customers and option valuation
Rebuttal testimony in Ohio Public Utilities Commission, application of financial options pricing techniques to assess the reasonableness of Dayton's proposed provider-of-last-resort charges, Case No. 05-276-EL-AIR, October 31, 2005.
- 2004** **Board of Public Utilities**
Cost of capital
Pre-filed testimony with Cindy Ma before the Board of Public Utilities, Newfoundland and Labrador, Canada, on “The Cost of Capital for Automobile Insurance Firms,” October 13, 2004.

CONSULTING EXPERT EXPERIENCE

2020	Confidential Client Exit from Generation & Transmission Cooperative Expert on appropriate buyout payment for a member to leave its transmission and generation cooperative.
2019-2020	United Power Exit from Generation & Transmission Cooperative Expert on appropriate buyout payment for United Power to leave the Tri-State Transmission and Generation Cooperative.
2019-2020	Confidential Client Decommissioning of coal-fired power plant Expert addressing the net cost of decommissioning a coal-fired power plant and regulatory cost recovery mechanisms.
2019	Confidential Client Cost of Capital Expert in dispute related to the financial structure and cost of capital for a FERC-regulated pipeline.
2019	Confidential Client Financial Structure Analysis Expert in dispute related to the financial structure of assets owned by a midstream oil and products company.
2016	Confidential Client Valuation of Solar Generation Facilities Expert in dispute related to the valuation of rooftop solar facilities. Provided valuation options to counsel to evaluate the reasonableness of the claimed tax basis and Section 1603 cash grant.
2014	Confidential Client Offshore Exploration and Production Permit Arbitration Expert in dispute related to an agreement between two firms to develop an offshore gas field in New Zealand in arbitration at the ICC International Court of Arbitration.
2014	Confidential client Breach of contract damages valuation for gas supply agreement Valued damages in a breach-of-contract dispute regarding gas supply in Western Australia.
2013–2016	Gaz Métro Cost Recovery of Gas Distribution System Upgrade

Kurt G. Strunk

Advised client on regulatory merits of ratemaking for distribution system upgrade. Performed survey of ratemaking policies for similar upgrades in other jurisdictions in connection with proceeding before Provincial regulator.

2014-2015

Confidential Client**Gas Supply Agreement Negotiation**

Advise on cost of service and LNG contract price issues in Western Australia.

2014- 2015

Alliance Pipeline**Restructuring of services and tolls**

Advised on Alliance's restructuring proposal in a matter before the National Energy Board. Supervised modelling of pipeline tolls and assessment of natural gas pipeline market power.

2014-2015

Gazprom OAO**Civil dispute involving gas field development and LNG importation**

Supervised modelling of LNG netback prices and damage calculations in preparation for a jury trial before a Tarrant County, Texas District Court. Consulted with respect to a dispute between a U.S oil company and Russian oil company regarding ownership of a Russian gas field, tortious interference, and trade secret misappropriation with regards to a plan to import LNG into the United States in the mid-2000s.

2014

FortisBC Energy Inc**Tolling for pipeline in Canada**

Analyzed toll methodology and advised on regulatory issues related to a tolling proposal of NGTL's North Montney Mainline, an extension of the existing NGTL Alberta System.

2014

Royal Bank of Canada**Gas Supply Agreement Dispute**

Served as consulting expert in a gas supply agreement dispute between RBC and three municipal gas distributors in Nevada and Iowa. Case involved analysis of Basel III regulations, capital requirements, commodity swaps and interest rate swaps.

2013

Confidential client**Valuation and pricing analysis**

Performed valuation and pricing analysis for oil pipeline dispute in Texas. Provided advice to outside counsel throughout litigation.

2012-2014

ATCO Gas & ATCO Electric**Cost of Service / Capital Trackers**

Provided expert review of ATCO Gas and ATCO Electric's capital tracker proposals, including a survey of capital trackers in other jurisdictions.

2012–2013

Confidential client

Valuation of oil pipeline company and its hedging positions

Performed valuation of oil pipeline company and its hedging positions in litigation involving an alleged breach of fiduciary duty. Provided advice to outside counsel throughout litigation.

2012–2013

Confidential client

Approaches to regulatory accounting and cost-of-service regulation

Contributed to study assessing benefits of various approaches to regulatory accounting and cost-of-service regulation for pipelines.

2011–2013

Confidential client

Possible outcomes of power contract (PPA) disputes

Analyzed potential litigation and settlement outcomes in a series of power contract disputes. Provided advice to outside counsel.

2011–2012

Confidential client

Oil pipeline cost of service and depreciation policies

Advised counsel to a shipper in an intrastate oil pipeline company rate case before the Kansas Corporation Commission.

2011

Confidential client

Antitrust aspects of a proposed pipeline merger

Analyzed antitrust aspects of oil pipeline combinations in connection with a proposed merger. Provided advice to outside counsel.

2010–2011

Confidential client

Valuation of generation assets

Performed valuation of power plant in context of alleged expropriation.

2010

Hydro Québec, Canada

Grid connection and upgrade cost policy

Analyzed grid connection and upgrade cost policy. Evaluated existing policy to allocate costs of grid upgrades to generation developers and system users. Suggested modifications to policy. Prepared benchmarking analysis comparing the company's practices to those of over a dozen other entities in North America.

2008

Confidential client

Allegations of energy market manipulation

Advised on the evaluation of allegations of energy market manipulation in the context of electricity trading in RTO-managed markets.

- 2007** **Confidential client**
Valuation of valuation of long-dated oil warrants
 Performed valuation of long-dated oil warrants priced off Venezuelan crude oil in context of damages calculation.
- 2006** **Confidential client**
Damages valuation in securities class action
 Valued damages in a securities class action related to the bankruptcy of an energy retailer.
- 2003-2004** **Confidential client**
Bid process advantages: generation pricing and transmission costs
 Contributed to testimony on behalf of a large electric utility regarding an affiliate transaction that resulted from a competitive solicitation.
 Testimony before FERC focused on whether the affiliate was advantaged during the bid process, both with respect to generation pricing and electric transmission cost.
- 2003** **Confidential client**
Valuation, economic, accounting, and hedging analysis
 Performed valuation, economic, accounting, and hedging analysis of a gas-fired power plant in an international arbitration matter.
- 2002** **Confidential client**
Prudence of forward power purchases
 Contributed to testimony on behalf of an electric utility regarding the prudence of forward power purchases during the Western power crisis.
- 2002–2003** **Pacific Gas & Electric**
Valuation of Damages Due to Gas Pipeline Capacity Withholding
 Performed analyses of damages from withheld pipeline capacity into California. Analyses led to \$1 billion settlement.
- 2002–2003** **Confidential client**
Prudence of forward power purchases
 Contributed to testimony regarding the prudence of Department of Water Resources's forward power purchases during the Western power crisis.
- 2002** **Confidential client**
Electric and gas hedging strategies for its generation assets
 Contributed to testimony on behalf of an energy marketing and trading firm regarding electric and gas financial hedging strategies for its generation assets, including an examination of the nature of competition among energy marketing and trading firms and strategies.

2001–2002	Pacific Gas & Electric Company FERC refund and other related proceedings Analysis and support to a California utility in the context of the FERC refund and other related proceedings, 2001-2002.
2001–2002	Pacific Gas & Electric Company Value of a long-term affiliate power sales agreement Contributed to testimony before FERC relating to the value of a long-term affiliate power sales agreement. Involved analysis and valuation of over 100 long-term power contracts (PPAs) in the context of this benchmarking analysis.
2001	Confidential client Valuation of a passive equity interest Contributed to testimony on behalf of a leading US energy company regarding the valuation of a passive equity interest in an IPP project in El Salvador.
2001	Baltimore Gas & Electric Company Business separation of Constellation Energy Group Contributed to testimony submitted to the Public Service Commission of Maryland on the business separation of Constellation Energy Group.
1998	Baltimore Gas & Electric Company Valuation of generation assets Performed valuation of Baltimore Gas & Electric Company's hydro, nuclear, coal and gas-fired generation assets in the context of stranded cost calculations during restructuring, 1998.
1995–1996	Confidential client Analysis of market concentration Performed HHI analyses to support testimony presenting a competitive assessment of the Western electric generation market in the US, 1995-1996.
1994–1995	Confidential client Damages valuation in securities class action Estimated losses and alleged damages for several mutual funds that invested in derivative securities.
1994–1995	Confidential client Damages valuation in securities class action Estimated losses and alleged damages for several mutual funds that invested in derivative securities.

Kurt G. Strunk

- 1994** **Goldman Sachs**
Default risk studies on fixed income instruments
Prepared default risk studies on fixed income instruments for counsel to Goldman Sachs in a broker/dealer arbitration.
- 1994** **Confidential client**
Damages valuation in securities class action
Consulted to counsel for an infomercial company on materiality, liability, and damages in a shareholder class action suit.
- 1993** **Confidential client**
Damages valuation in securities class action
Assessed materiality and damages in a 10b-5 class action against a major pharmaceutical company.

ADVISORY PROJECTS

- 2020** **Offshore Wind Auction**
Due Diligence for Bidder
 Provided strategic advice and due diligence relating to the competitive landscape for past and upcoming offshore wind auctions.
- 2020** **Acquisition of Gas LDC**
Due Diligence for Investor Group
 Provided strategic advice and due diligence relating to the financial valuation of a gas LDC and prospective acquisition.
- 2017-2019** **Valuation of Vertically-Integrated Electric Utility**
Due Diligence for Prospective Acquirer
 Retained by an electric utility to advise on valuation of a target utility acquisition. Assisted client in developing reasonable offers to acquire the target electric utility. Advised utility during negotiations.
- 2017** **Investment in Coal-Fired Power Plant**
Due Diligence for Owner
 Retained by a confidential owner. Provided strategic advice and due diligence relating to the financial valuation of owners interest and prospective sale.
- 2017** **Marginal Cost Study for Value of Distributed Resource**
Due Diligence for Prospective Acquirer
 Retained by NYSEG and RG&E to perform a marginal cost study to estimate key components of the value stack, to be paid to solar and other distributed energy resources,
- 2017** **Leveraged Lease tied to Coal-Fired Power Plant**
Due Diligence for Prospective Acquirer
 Retained by a confidential acquirer to evaluate a target utility-related investment. Provided strategic advice and due diligence relating to the financial valuation and post-acquisition benefits.
- 2016** **Utility Merger**
Due Diligence on Merger Benefits
 Retained by a confidential acquirer to evaluate merger benefits in the context of the combination of two adjacent electric utilities. Provided strategic advice and due diligence relating to merger benefits.
- 2016** **Wind Power Transaction**
Due Diligence for Prospective PPA Offtaker

Retained by a confidential offtaker to evaluate the costs, benefits and risks associated with a prospective long-term power purchase transaction backed by a wind farm.

2016

Electric Utility Acquisition

Due Diligence for Prospective Acquirer

Retained by a confidential equity investor to evaluate key inputs for the acquirer's valuation model of an electric utility. Advised investor on key elements of the valuation.

2015

Ministry of Energy, Mexico

Restructuring of the Mexican energy sector

Served as leader for several work streams performed on behalf of the Mexican Ministry of Energy implementing energy sector restructuring. Advice included the design of a competitive spot market, the development of green power auctions (solar and wind), basic service supply pricing, electricity transmission pricing, upstream gas pricing and the development of a regulatory framework for the sector.

2015

Southern Star Central Gas Pipeline

Due Diligence for Prospective Acquirer

Retained by a confidential equity investor to evaluate regulatory and investment risk associated with the prospective acquisition of an interest in Southern Star. Analyzed likely outcomes in the pipeline's upcoming rate case, and their implications for the valuation of the target.

2015

Independent Electricity System Operator (IESO)

Reasonableness of 6,300 MW Power Transaction

Retained by IESO in Ontario, Canada, to prepare, together with a team of NERA experts, an Opinion as to the Fairness of the Amended and Restated Bruce Power Refurbishment Implementation Agreement.

2015

ESKOM, South Africa

Regulatory Strategy for Cost Recovery

Retained by ESKOM to advise on regulatory strategy, treatment of coal-plant operation and associated fuel costs, delays in unit online dates, prudent utility practice, and other regulatory issues.

2015

Bermuda Electric, Bermuda

Regulatory Strategy, Cost of Service, and Tariffs

Advised on regulatory strategy. Developed costing and pricing model for Bermuda Electric.

2014

Hawaiian Electric Company

Fuel Adjustment Clause and Oil Hedging

Kurt G. Strunk

Retained by Hawaiian Electric Company to provide analysis regarding the efficiency incentives embedded in the company's fuel adjustment clause (ECAC). Analyzed the possibility of hedging oil price volatility through commercially-available contracts.

2014

Confidential Client**Pricing Principles for Domestic Gas Reservation Policy**

Formulated a methodology to determine a schedule of reasonable prices using a cost of service approach for gas that the company is obligated to market under the domestic gas supply policy in Western Australia.

2012/2013

Atlantic Path 15**Due Diligence Study for Confidential Potential Buyer**

Performed regulatory due diligence in connection with the potential acquisition of Atlantic Path 15 transmission assets. Evaluated the regulatory climate at FERC and analyzed FERC decisions from prior rate cases, with a focus on allowed rate of return. Used NERA rate-of-return models to replicate the FERC methodology and to predict the rate-of-return to be allowed by FERC in the next rate case.

2013

Energy trading entity**Price risks and electricity transmission development**

Retained by energy trading entity to perform an independent study of price risks and electricity transmission development in the ERCOT market.

2013

Electric industry client**Reactive power compensation**

Retained by electric industry client to analyze electricity transmission tariffs and reactive power compensation in competitive electric markets.

2012/2013

New Mexico Natural Gas Company**Due Diligence Study for Confidential Acquirer**

Performed regulatory due diligence in connection with the potential acquisition of New Mexico Natural Gas. Assessed hurdles to getting the transaction approved by regulatory authorities. Analyzed recent rate actions by the state commission and the likely outcomes of future cases. Advised on key inputs into the acquirer's financial model.

2012

Oil industry client**Regulation benchmarking in downstream oil sector**

Retained by oil industry client to advise on margins and to perform an international benchmarking of the regulation of the downstream oil sector.

2012

Hawaiian Electric Company**Hedging and rate stabilization**

Retained by Hawaiian Electric Company to provide analysis regarding hedging of fuel oil and diesel fuel purchases in order to stabilize customer rates.

- 2011** **Confidential client**
Implications of CFTC proposed definition of swap dealer
 Advised on margin, capital and reporting implications of CFTC proposed definition of swap dealer under Dodd Frank.
- 2010** **Confidential client**
Leveraged lease transaction
 Provided litigation support services with respect to a dispute over a leveraged lease transaction.
- 2010** **Confidential client**
Valuation, risk assessment and analysis of offtake contract options
 Performed detailed valuation, risk assessment and analysis of offtake contract options for a hydroelectric power plant.
- 2009** **Potomac Edison Company**
Capital investment planning
 Performed least-cost capital investment planning on behalf of the Potomac Edison Company.
- 2009** **Government of New Brunswick, Canada**
Advised on electric utility valuation
 Advised Government of New Brunswick on the valuation of the vertically-integrated, provincially-owned electric utility, NB Power, in connection with the potential sale to Hydro Québec. Developed a financial and rate model reflecting the New Brunswick regulatory system and performed valuations for a stand-alone and merged case and performed numerous valuations of the benefits to the acquirer. Developed key inputs for the valuation, including the Point Lepreau Nuclear Generation Station. Coordinated development of fairness opinion.
- 2009** **Energy East**
Cost of capital
 Advised on rate-of-return issues for electricity distributors in New York State.
- 2008** **Confidential client**
Contract design
 Advised on design of structured contract for new renewable power plant, new electricity transmission lines and associated RFPs.

2008	Commission for Energy Regulation Review of SOLR tariffs Advise the Commission for Energy Regulation on the review of SOLR tariffs in the Republic of Ireland.
2008	Comisión Nacional de Energía Market mechanisms for distributions to serve default customers Advised on design and implementation of market mechanisms by which Spanish electric utilities buy energy to serve default customers.
2006–2009	Hawaiian Electric Company Hedging options for fuel Performed economic and accounting analysis of hedging options for low sulfur fuel oil, diesel and fuel oil on behalf of Hawaiian Electric Company.
2004–2010	Commonwealth Edison and Ameren’s Illinois utilities Competitive procurement for power supply Advised Commonwealth Edison and Ameren’s Illinois utilities on the design of a competitive procurement for short- and long-term power supply, including the contractual framework for energy purchases, 2004 to 2010.
2004–Present	New Jersey and Maryland distribution utilities Mark-to-market issues and credit policies Advised several utilities in the Eastern Interconnection on mark-to-market issues and credit policies.
1999–2008	New Jersey distribution utilities Contract design and implementation Worked with credit representatives of New Jersey distribution utilities on contract design and implementation of the contract credit terms. Coordinated the utilities’ responses to changes to the forms of letters of credit proposed by bidders; oversaw bidder credit qualification process; managed approval process for alternate guaranty instruments, and served as advisor to utilities when contract interpretation issues arose, 1999 to 2008.
1999–2008	FirstEnergy Companies Competitive procurement for power supply Advised the FirstEnergy Companies on the design of a competitive procurement for intermediate term power supply, including the contractual framework for energy purchases, 2004-2005.

- 2003** **Commission for Energy Regulation**
Hedging agreement and a power plant construction agreement
 Advised the Commission for Energy Regulation in Ireland on the structure of a long-term hedging agreement and a power plant construction agreement; assisted with the development of the hedging contract and the tender documentation; performed bid evaluation.
- 2002** **Sierra Pacific Resources**
Risk management strategies
 Advised a major west coast utility in the US on the development of its risk management policy and procedures; reviewed past trading and risk management strategies; and performed an assessment of its risk measurement and reporting techniques, including credit risk management policy.
- 2000** **Ministry of Energy, México**
Mexican IPP solicitation program
 Advised on the development of the Mexican IPP solicitation program, including transaction structure (IPP v. BLT v. BOT), credit risk management, model contracts, and bid evaluation (the Comisión Federal de Electricidad has procured as much as 2000 MW per year of long-term power supply from IPPs).
- 2000** **Comisión Federal de Electricidad, Mexico**
Credit and collateral requirements for a power purchase agreement
 Advised the Comisión Federal de Electricidad in Mexico on credit and collateral requirements for an-asset backed power purchase agreement with an IPP based in Mexico, including advice on the development of comparable credit and collateral requirements for an import transaction that was to be made on a firm basis with liquidated damages.
- 1998–2000** **Ministry of Energy, Mexico**
Restructuring and privatization of the Mexican electricity sector
 Consulted to the Mexican Ministry of Energy on the restructuring and privatization of the Mexican electricity sector, the design of a competitive spot market, and the policy of IPP solicitations, electricity transmission pricing, upstream gas pricing and the development of a regulatory framework for the sector.
- 1998–1999** **Ministry of Energy, Mexico**
Assessing competition in restructured Mexican electric generation
 Contributed to study assessing competition in restructured electric generation market in Mexico.
- 1999** **Swiss Re**
Novel insurance packages to hedge electric price and operations risk

Assisted Swiss Re in the development of the modeling for the creation of novel insurance packages to hedge electric price and operations risk, 1999.

- 1998 Iberdrola S.A., Spain**
Seminars on the deregulated markets for gas and electricity in the US
 Designed and conducted a series of three training courses for representatives of Iberdrola S.A. (Spain's principal private utility), which consisted of seminars on the deregulated markets for gas and electricity in the US, followed by a series of interviews with large utilities, IPPs, and energy marketers. Courses were designed to provide the European traders with an understanding of best practices employed by energy traders in the US, with respect to risk management (credit, market, and operational), 1998.
- 1998 C.E.L.P.E, Brazil**
Risk management and energy trading
 Assisted in training senior management of Iberdrola's Brazilian subsidiary C.E.L.P.E. in the area of risk management and energy trading.
- 1998–2000 Baltimore Gas & Electric Company**
Sector restructuring
 Consultant to Baltimore Gas & Electric Company on sector restructuring.
- 1998–1999 Baltimore Gas & Electric Company**
Valuation of electric power assets
 Assisted in developing market value estimates of Baltimore Gas & Electric Company's generation fleet, including Calvert Cliffs Nuclear Power Plant.
- 1998 Confidential Client**
Generation and fuel strategy
 Participated in the development of a generation and fuel strategy for a large merchant generator and energy trader.
- 1996 Iberdrola, S.A, Spain**
Restructuring of the electricity sector
 Consultant to Iberdrola, S.A. on issues relating to the restructuring of the electricity sector in Spain.
- 1996 Confidential client**
Investment strategy
 Consultant to a major southeastern electric utility on investment strategy in the US including valuation of various targets.
- 1996 Confidential client**
Competitive analysis of electric generation

Kurt G. Strunk

Performed competitive analysis of electric generation market for utilities in eastern US.

- 1996** **New York State Electric and Gas Company**
Restructuring of the electricity market in New York State
 Consultant to the New York State Electric and Gas Company on issues relating to the restructuring of the electricity market in New York State.
- 1995–1996** **New York Power Authority**
Sector restructuring
 Consultant to senior management of the New York Power Authority on issues relating to the New York Competitive Opportunities Docket.
- 1995** **Southern California Edison Company**
Proposed restructuring of California’s electric services industry
 Consultant to Southern California Edison Company on issues relating to the California Public Utilities Commission’s Proposed Policies Governing Restructuring California’s Electric Services Industry and Reforming Regulation.

Publications and Presentations

- 2019** **Republic of Indonesia**
 Presentations to Perusahaan Gas Negara, BHP Migas (regulator), and the Ministry of Energy and Mineral Resources of the Republic of Indonesia addressing the design and solicitation of natural gas distribution concessions. October, 2019.
- 2019** **Republic of Indonesia**
 Presentations to Perusahaan Gas Negara and BHP Migas (regulator) addressing connection policies and market development strategies for greenfield natural gas distributors. October, 2019.
- 2019** **Florence School of Regulation**
Specialised Training on the Regulation of Gas Markets
 Gas Sector Regulation: The US Experience
 March 2019.
- 2019** **Electricity Journal**
 Could Mexico’s Capacity Market Design Lead to Gaming by Generators?
 March 2019.

- 2018** **Perusahaan Gas Negara
Specialized Training**
Conducted specialized training course on the design and award of energy-sector concessions.
December 2018.
- 2018** **Center for Research in Regulated Industries
Eastern Conference**
Mexican Capacity Market Design and Market Power Potential
June 2018.
- 2018** **Florence School of Regulation
Specialised Training on the Regulation of Gas Markets**
Gas Sector Regulation: The US Experience
March 2018.
- 2017** **Electricity Journal**
Beyond net metering: A model for pricing services provided by and to distributed generation owners, such as rooftop solar.
April 2017.
- 2017** **Law Seminars International Electric Utility Rate Case Conference**
Beyond Net Metering: Ratemaking Challenges from Distributed Generation.
Las Vegas, March 16 2017.
- 2017** **Public Utilities Fortnightly**
Interest Rates After the Election: What They Mean for Public Utility Returns.
January 2017.
- 2016** **Perusahaan Gas Negara, Jakarta, Indonesia**
Provided in-depth training on regulatory practice and tariff design for gas pipelines and distribution companies.
December 2016.
- 2016** **Electricity Journal**
Low interest rates and unprecedented stock market volatility: What they mean for your next rate case.
January-February 2016.
- 2016** **An Economic Analysis of the Acquisition of ConocoPhillips' Interest in the Beluga River Unit**, A Report Prepared for Chugach Electric Association, Inc. and Anchorage Municipal Light and Power, March 11, 2016.

- 2016** **Law Seminars International, 12th Annual National Conference on Current Issues in Electric Utility Ratemaking**
Policy Options to Address Cross Subsidies from Self Generation, March 14, 2016
- 2016** **International Arbitration Group of International Law Firm**
Applications of Economic Analysis in International Arbitration (with a focus on the Energy Sector)
New York, January 12, 2016
- 2015** **The Electricity Journal**
Low interest rates and unprecedented stock market volatility:
What they mean for your next rate case
December 2015
- 2015** **Utility Regulation Conference: Rate Case, ROE, and Reliability**
Brave New World for Return on Equity
Washington DC, December 10-11, 2015
- 2015** **Law Seminars International, Energy in the Northeast**
Energy Sector Developments and the Cost of Capital
Boston, September 29, 2015
- 2015** **Law Seminars International, Rate Case Conference**
A Brave New World for Return on Equity
Las Vegas, March 5, 2014
- 2014** **Law Seminars International, Rate Case Conference**
Current Challenges in Determining Appropriate Rates of Return for Public Utilities
Las Vegas, February 28, 2014
- 2014** **National Energy Agency (China) and representatives of the State Grid**
Regulatory Accounting and the FERC Uniform System of Accounts
Beijing, January 16, 2014
- 2012** **Agencia Nacional de Petroleo, Gas Natural e Combustiveis (Brazil)**
Natural Gas Pipeline Regulation in the United States (training course)
Rio de Janiero, September 18-19, 2012
- 2012** **Center for Research in Regulated Industries Eastern Conference**
Optimal Capital Structures for Regulated Public Utilities: When Does an Imputed Debt Ratio Make Sense for Ratemaking Purposes?
Eastern Conference, Delaware May 18, 2012
- 2012** **Energy Policy Briefing Note**

Kurt G. Strunk

- The Real Costs of Eliminating Unsecured Credit Lines and Requiring Cash Collateral in OTC Swaps Markets
Co-author: Sharon Brown-Hruska, March 13, 2012
- 2012** **Law Seminars International, Electric Utility Rate Case Conference**
Marginal Cost Pricing for Rate Design
Las Vegas, February 2, 2012.
- 2012** **Center for Research in Regulated Industries**
Advanced Workshop in Regulation and Competition
Gas Pipeline Overearning Investigations
Newark, New Jersey, January 13, 2012.
- 2011** **Working Group of Commercial Energy Firms**
Cost-Benefit Analysis of the CFTC's Proposed Swap Dealer Definition
December 20, 2011.
- 2011** **Law Seminars International, Renewable Energy in the Pacific Northwest**
Abundant Low-Cost Natural Gas? A Driver of Market Activity
August 4, 2011.
- 2011** **Public Utilities Fortnightly**
Zone of Reasonableness: Coping with Rising Profitability a Decade after Restructuring
July 2011.
- 2011** **Law Seminars International, Electric Utility Rate Case Conference**
Rate Design Issues Among Customer Classes
Las Vegas, February 10, 2011.
- 2011** **Advanced Workshop in Regulation and Competition, Center for Research in Regulated Industries**
Decoupling and the Cost of Equity
Newark, New Jersey, January 14, 2011.
- 2010** **New York State Bar Association, Business Law Section Committee on Public Utility Law**
Getting Renewables to Market: The Importance of Transmission Ratemaking Policy
New York, July 24, 2010.
- 2009** **Law Seminars International Conference, Renewable Energy in New England**
Getting Renewable Power to Market
Boston, June 25, 2009.

- 2008** **Report for Baltimore Gas & Electric and Allegheny Power**
Evaluation of Longer-Term Procurement Plans
October 1, 2008.
- 2008** **Electricity Journal**
The Continuing Rationale for Full and Timely Recovery of Fuel Price
Levels in Fuel Adjustment Clauses
July 2008.
- 2008** **Energy in the Southwest Conference**
Natural Gas as a Fuel: Will There Be Enough? At What Prices?
July 22, 2008.
- 2007** **NERA Economic Consulting**
The Line in the Sand: The Shifting Boundary Between Markets and
Regulation in Network Industries.
Coauthor.
- 2007** **Electric Utility and Natural Gas Interdependency**
Managing Risk in Interdependent Gas and Power Markets
Houston, March 6, 2007.
- 2004** **Electricity Journal**
FERC Imposes New Constraints on Utility Procurement
October 2004.
- 2003** **Northeast Gas Storage and Supply Strategies**
Can Your Capital Structure Handle Today's Market, Credit and Liquidity
Risks?
Boston, June 17, 2003.
- 1996** **World Bank**
Regulatory and institutional reforms in the Chinese power sector
Contributor, 1996.
- 1993** **World Development**
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